

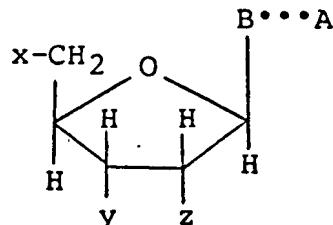
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MODIFIED NUCLEOTIDES AND
METHODS OF PREPARING AND USING SAME

ABSTRACT OF THE DISCLOSURE

Compounds having the structure:

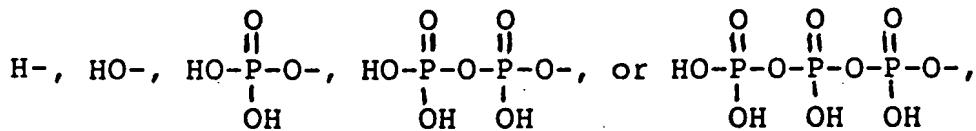


wherein B represents a purine, 7-deazapurine, or pyrimidine moiety covalently bonded to the C¹-position of the sugar moiety, provided that when B is purine or 7-deazapurine, it is attached at the N⁹-position of the purine or 7-deazapurine and when B is pyrimidine, it is attached at the N¹-position;

wherein A represents a moiety consisting of at least three carbon atoms which is capable of forming a detectable complex with a polypeptide when the compound is incorporated into a double-stranded ribonucleic acid, deoxyribonucleic acid duplex, or DNA-RNA hybrid;

wherein the dotted line represents a chemical linkage joining B and A, provided that if B is purine, the linkage is attached to the 8-position of the purine, if B is 7-deazapurine, the linkage is attached to the 7-position of the deazapurine, and if B is pyrimidine, the linkage is attached to the 5-position of the pyrimidine; and

wherein each of x, y and z represents



either directly, or when incorporated into oligo- and poly-nucleotides, provide probes which are widely useful.

- 5 Applications include detection and localization of poly-nucleotide sequences in chromosomes, fixed cells, tissue sections, and cell extracts. Specific applications include chromosomal karyotyping, clinical diagnosis of nucleic acid-containing etiological agents, e.g. bacteria, viruses, or fungi, and diagnosis of genetic disorders.